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# Report on the Washington Retirement Systems



*Results of the 1999  
Actuarial Valuations*

*PREPARED IN:* OCTOBER 2000  
*PREPARED BY:* THE OFFICE OF THE STATE ACTUARY

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WASHINGTON STATE LEGISLATURE  
**Office of the State Actuary**

Gerald B. Allard

October 2000

The state's retirement systems represent a large financial commitment for public agencies, for their employees, and for Washington taxpayers. The funding of retirement benefits is inherently complex but it is important for the public and legislators to have information available to assess the funding and health of the systems. Each year this office develops information on funding and the funded status of each of the systems in an "Actuarial Valuation." This study is performed according to accepted actuarial practices and statutorily-prescribed methods.

This "Report on the Washington Retirement Systems" provides the results of the latest actuarial valuations for the state's larger retirement systems. Other information is included to aid in understanding the operations and dynamics of the systems.

An actuarial valuation requires information about membership and assets, and a set of assumptions about future events. The Actuary's office does not maintain this data, but relies on other state agencies to supply the information necessary to the process. Membership data is provided by the Department of Retirement Systems. Asset information is supplied by the State Investment Board and assumptions are adopted by the Pension Funding Council. A chart of how these and several other agencies impact the retirement systems is printed on the back cover of the report.

The effective date for the Teachers' system is June 30, 1999. The effective date for all other systems is December 31, 1999. Unless otherwise noted, all references to statute and funding processes are as of the 1999 valuation date. Legislation enacted after that date may have made changes to current law and practices.

You may receive additional copies of this Report by contacting the Office of the State Actuary.

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# System Membership

## Overview

In 1999, the state administered seven major retirement systems for state and local public employees. That number increased to eight when the School Employees' Retirement System (SERS) became operational on September 1, 2000.

Retirement system membership is determined according to occupation and employer. Employees covered by each system are defined in separate chapters of the Revised Code of Washington (RCW).

This report focuses on the five largest retirement systems: the Public Employees' Retirement System (PERS), Teachers' Retirement System (TRS), Law Enforcement Officers' and Fire Fighters' Retirement System (LEOFF), School Employees' Retirement System (SERS) and Washington State Patrol Retirement System (WSP). The types of employees who have membership in each of the five main systems are as follows:

**Public Employees' Retirement System (PERS) (Chapter 41.40 RCW):**

State employees; employees of all counties and most cities (the exceptions are Tacoma, Seattle, and Spokane); non-teaching employees of institutions of higher learning and community colleges; employees of ports, service districts, the Washington Public Power Supply System and public utility districts. Judges first elected or appointed after June 30, 1988 are also included.

**Teachers' Retirement System (TRS) (Chapter 41.32 RCW):**

Certificated teachers; administrators; and educational staff associates.

**School Employees' Retirement System (SERS) (Chapter 41.35 RCW):**

Classified school district employees.

**Law Enforcement and Fire Fighter's Retirement System (LEOFF)**

**(Chapter 41.26 RCW):** Fire fighters; law enforcement officers including sheriffs; university, port and city police officers.

**Washington State Patrol Retirement System (WSP) (Chapter 43.43**

**RCW):** Commissioned officers of the Washington State Patrol.



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The state also maintains retirement systems for volunteer fire fighters, and judges. The judges' systems are closed. Judges hired after June 30, 1988, are members of PERS 2.

A relatively small number of public employees are members of systems not administered by the state. These include faculty and some administrators at state colleges and universities. This group participates in defined contribution programs administered by individual institutions. Collectively, they are known as the Higher Education Retirement Plan. Information on Higher Education plans is not included in this report.

The cities of Seattle, Tacoma and Spokane maintain their own retirement systems. All municipal employees belong to the city systems, except police and fire fighters who are members of LEOFF.

By far the largest retirement system administered by the state is PERS. Public employees are mandated into PERS unless specifically required to participate in another system.

In the past, membership in the retirement plans was determined by when a member was first hired for public employment. Plan 1 tiers were closed to new members when the Plan 2 tiers opened. When the Plans 3 were created in TRS and SERS, their Plans 2 were closed to new members. Beginning in 2002, the PERS system will have two plans open to new members at the same time. Newly-hired employees will have the option of becoming members of Plan 2 or Plan 3. The following table shows the relevant dates for each operational plan and PERS 3.

Plan	Plan Status	
	Opened	Closed
<b>PERS 1</b>	10/1/47	9/30/77
<b>TRS 1</b>	3/1/38	9/30/77
<b>LEOFF 1</b>	3/1/70	9/30/77
<b>WSP</b>	6/12/47	Ongoing
<b>PERS 2</b>	10/1/77	On-going
<b>TRS 2</b>	10/1/77	6/30/96
<b>LEOFF 2</b>	10/1/77	On-going
<b>SERS 2</b>	9/1/00	9/1/00
<b>TRS 3</b>	7/1/96	On-going
<b>SERS 3</b>	9/1/00	On-going
<b>PERS 3</b>	3/1/02 or 9/1/02	On-going

PERS 2 members who are employed by school districts are mandated into SERS 2 as of September 1, 2000. All new employees become members of SERS 3. SERS 2 members have the option of making an additional transfer to SERS 3.

PERS 3 opens March 1, 2002 for state agencies and institutions of higher education and September 1, 2002 for local government agencies.



### 1999 Total Membership By Plan & Status

Plan	Actives	Annuityants	Total <sup>1</sup>	% of All Actives	% of All Annuityants
PERS 1	28,168	52,515	80,683	9.6%	52.7%
PERS 2	122,570	6,765	129,335	41.9%	6.8%
TRS 1	18,737	28,920	47,657	6.4%	29.0%
TRS 2	8,663	398	9,061	3.0%	0.4%
TRS 3	35,284	50	35,334	12.1%	0.1%
SERS 2	45,644	0	45,644	15.6%	0.0%
LEOFF 1	1,743	7,623	9,366	0.6%	7.6%
LEOFF 2	12,713	100	12,813	4.3%	0.1%
WSP	968	647	1,615	0.3%	0.6%
Others <sup>2</sup>	18,092	2,649	20,741	6.2%	2.7%
<b>Total</b>	<b>292,582</b>	<b>99,667</b>	<b>392,249</b>	<b>100%</b>	<b>100%</b>

<sup>1</sup> Excludes terminated vested members.

<sup>2</sup> Includes Volunteer Fire, Judicial and Judges.

The tables in this section reflect the number of active members who will be transferred from PERS 2 to SERS 2. Complete information about this new system will be available in the 2000 valuation. While SERS 2 was not operational during the 1999 valuation year, some information about anticipated SERS membership has been provided in this report.

**Active members** are those who continue to accrue benefits by virtue of employment in a position covered by one of the Washington retirement systems.

**Annuityants** are individuals receiving either retirement, disability or survivor benefits.

**Terminated-vested** members are individuals who earned at least five years of service in a retirement system, then left employment without withdrawing their employee contributions.

These individuals retain the right to a retirement benefit upon reaching retirement age. They may also return to active membership in the future and receive credit for previous service rendered.

### 1999 Active Membership by Employer

Washington retirement system members are employed by over 1,200 individual state and local public entities.

The tables on the following page show the distribution of membership among these employers for the five largest retirement systems.



# 1999 ACTUARIAL VALUATION REPORT

<b>Active Membership By Employer &amp; Plan</b>						
<b>Employer</b>	<b>Total by Employer</b>	<b>PERS</b>		<b>TRS</b>		
		<i>Plan 1</i>	<i>Plan 2</i>	<i>Plan 1</i>	<i>Plan 2</i>	<i>Plan 3</i>
State Agencies	59,108	10,738	47,187	141	14	60
Higher Education	18,327	2,604	15,549	68	5	4
Comm. Colleges	5,763	708	4,539	384	67	65
K-12	111,258	5,284	0	18,063	8,514	35,013
Counties	28,452	3,505	22,332	0	0	0
County Sub Div.	15,220	1,781	13,439	0	0	0
First Class Cities	8,154	503	2,645	0	0	0
Other Cities	15,651	1,392	9,599	0	0	0
Ports	2,026	310	1,552	0	0	0
Ed. Service Dist.	1,653	107	0	81	63	142
Fire Districts	2,358	39	405	0	0	0
Public Utility Dist.	3,768	784	2,984	0	0	0
Water Districts	1,619	248	1,371	0	0	0
WPPSS	1,091	123	968	0	0	0
Unions	42	42	0	0	0	0
<b>Total</b>	<b>274,490</b>	<b>28,168</b>	<b>122,570</b>	<b>18,737</b>	<b>8,663</b>	<b>35,284</b>

<b>Active Membership by Employer &amp; Plan</b>				
<b>Employer</b>	<b>SERS</b>	<b>LEOFF</b>		<b>WSP</b>
	<i>Plan 2</i>	<i>Plan 1</i>	<i>Plan 2</i>	
State Agencies	0	0	0	968
Higher Education	0	0	97	0
Comm. Colleges	0	0	0	0
K-12	44,384	0	0	0
Counties	0	248	2,367	0
County Sub Div.	0	0	0	0
First Class Cities	0	902	4,104	0
Other Cities	0	457	4,203	0
Ports	0	8	156	0
Ed. Service Dist.	1,260	0	0	0
Fire Districts	0	128	1,786	0
Public Utility Dist.	0	0	0	0
Water Districts	0	0	0	0
WPPSS	0	0	0	0
Unions	0	0	0	0
<b>Total</b>	<b>45,644</b>	<b>1,743</b>	<b>12,713</b>	<b>968</b>

## Membership Status

Members join and leave the systems by a variety of means. Tracking this activity identifies trends in membership and the effect of legislative changes on the systems' demographic experience.

The sequential relationship of the 1, 2 and 3 plans creates differences in the composition of plan membership. The older Plan 1 systems contain more annuitants than active members. In the younger 2/3 Plans, the opposite is true.

No new members have entered the Plan 1 tiers since 1977. TRS 2 membership was capped in 1996. Membership growth in these plans is comprised entirely of members who qualified for membership through prior employment, left the

system and have been rehired. In other plans, rehires are only a small percent of membership growth.

All retired members receive a benefit for life. Their benefit may continue after their death to a survivor or beneficiary. Whether a member leaves a beneficiary is determined either by the benefit payment option chosen at retirement or, in the case of the LEOFF 1 and WSP systems, by eligibility requirements defined in statute.

In the table below, new retirees are listed twice. In the "Active" portion of the table, new retirees include disability retirees and members who retire from active status. The "Annuitant" portion of the table includes the above, as well as members retiring from terminated vested status.

<b>1999 Membership Status</b>					
	<b>PERS/SERS</b>		<b>TRS</b>		
	<i>Plan 1</i>	<i>Plan 2</i>	<i>Plan 1</i>	<i>Plan 2</i>	<i>Plan 3</i>
1998 Actives	30,374	161,476	20,165	9,058	32,605
Transfers	0	0	0	(140)	187
Hires/ Rehires (+)	700	23,570	272	475	4,448
New Retirees (-)	(2,072)	(588)	(1,382)	(58)	(32)
Deaths (-)	(62)	(157)	(33)	(7)	(14)
Terminations (-)	(772)	(16,087)	(285)	(665)	(1,910)
<b>1999 Actives</b>	<b>28,168</b>	<b>168,214</b>	<b>18,737</b>	<b>8,663</b>	<b>35,284</b>
1998 Annuitants	51,948	5,685	28,141	312	10
New Retirees (+)	2,277	1,150	1,522	87	35
Annuitant Deaths (-)	(2,095)	(118)	(879)	(3)	0
New Survivors (+)	403	48	155	3	5
Returned to Work (-)	(18)	0	(19)	(1)	0
<b>1999 Annuitants</b>	<b>52,515</b>	<b>6,765</b>	<b>28,920</b>	<b>398</b>	<b>50</b>
<b>Ratio Actives to Annuitants</b>	<b>0.54</b>	<b>24.87</b>	<b>0.65</b>	<b>21.77</b>	<b>705.68</b>



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1999 Membership Status			
	LEOFF		WSP
	Plan 1	Plan 2	
1998 Actives	1,986	11,870	929
Transfers	0	0	0
Hires/ Rehires (+)	20	1,224	86
New Retirees (-)	(242)	(18)	(35)
Deaths (-)	(1)	(7)	(1)
Terminations (-)	(20)	(356)	(11)
<b>1999 Actives</b>	<b>1,743</b>	<b>12,713</b>	<b>968</b>
1998 Annuitants	7,434	80	612
New Retirees (+)	263	23	35
Annuitant Deaths (-)	(154)	(2)	(14)
New Survivors (+)	85	0	14
Returned to Work (-)	(5)	(1)	0
<b>1999 Annuitants</b>	<b>7,623</b>	<b>100</b>	<b>647</b>
<b>Ratio Actives to Annuitants</b>	<b>0.23</b>	<b>127.13</b>	<b>1.50</b>

## Membership Demographics

**Profile of Active Members:** The number of Plan 1 members are decreasing each year through terminations and retirements. Not surprisingly, Plan 1 total salaries are also decreasing. However, due to annual salary increases, the total amount of salaries is decreasing at a slower rate than membership.

Salaries will not show significant decreases until the rate of members leaving the plan is greater than the rate of salary increases.

Total annual salaries in Plans 2/3 are growing due to three factors: salary increases, overall growth in system membership and new members replacing retiring Plan 1 members.

1999 Active Member Demographics					
	PERS/SERS		TRS		
	Plan 1	Plan 2	Plan 1	Plan 2	Plan 3
Number of Active Members	28,168	168,214	18,737	8,663	35,284
Percent Change from 1998	(7.3%)	4.2%	(7.1%)	(4.4%)	8.2%
Total Annual Salaries (millions)	\$ 1,184	\$ 5,546	\$ 984	\$ 373	\$ 1,446
Percent Change from 1998	(4.0%)	8.1%	(5.9%)	(2.1%)	9.0%
<b>Averages:</b>					
Current Age	53.0	43.4	52.8	46.1	39.8
Years of Service	20.1	7.4	22.9	9.2	7.8
Annual Salary	\$42,045	\$32,971	\$52,540	\$43,022	\$40,979
Percent Change from 1998	3.6%	3.8%	1.3%	2.2%	0.7%



### 1999 Active Member Demographics

	LEOFF		WSP
	Plan 1	Plan 2	
Number of Active Members	1,743	12,713	968
Percent Change from 1998	(12.2%)	7.1%	4.2%
Total Annual Salaries (millions)	\$ 106	\$ 725	\$ 56
Percent Change from 1998	(9.4%)	11.7%	9.8%
<b>Averages:</b>			
Current Age	51.2	37.8	38.4
Years of Service	26.2	9.2	12.5
Annual Salary	\$60,683	\$57,031	\$57,496
Percent Change from 1998	3.1%	4.3%	4.8%

**Profile of Annuitants:** The Plan 1 tiers produce the most new retirees each year, but because they already have significant numbers of retirees, the annual percentage increase is small. In Plan 2, members are just beginning to reach retirement eligibility. While the actual numbers of new retirees is less than Plan 1, the percentage increases are much higher.

PERS 2 shows the most retirees of the Plan 2 tier. This is due to the larger active membership and a higher percentage of members first hired after age 50. Only members hired at older ages have had time to reach the age 65 eligibility for normal retirement. The youngest person hired into Plan 2 who could have reached age 65 by 1999 would have been hired at age 43.

The current group of Plan 2 retirees do not represent what eventually will be the typical retiree. The benefits of current Plan 2 retirees come from short service, late-age hires who have retired at age 65 or older.

Retirement can have a different meaning in the Plan 3 systems than in Plans 1 or 2. In Plan 3, members can begin receiving distributions from their defined contribution account at any age if they have left employment. At this point the member may consider himself to be "retired." For purposes of this report, only those members who have begun receiving monthly payments from the defined benefit portion of Plan 3 are considered retired.



# 1999 ACTUARIAL VALUATION REPORT

## 1999 Annuitant Demographics

	PERS/SERS		TRS		
	<i>Plan 1</i>	<i>Plan 2</i>	<i>Plan 1</i>	<i>Plan 2</i>	<i>Plan 3</i>
Number of Annuitants	52,515	6,765	28,920	398	50
Percent Change from 1998	1.1%	19.0%	2.8%	27.6%	400.0%
Total Annual Benefits (millions)	\$ 609	\$ 39	\$ 428	\$ 3	\$ 0
Percent Change from 1998	7.8%	25.8%	7.5%	0.0%	0.0%
<b>Averages:</b>					
Current Age	73.1	69.3	71.3	67.7	59.2
Years of Service	20.2	11.1	25.4	11.8	14.5
Monthly Benefit	\$ 967	\$ 483	\$ 1,233	\$ 726	\$ 295
Percent Change from 1998	6.7%	7.1%	4.7%	8.0%	15.2%

## 1999 Annuitant Demographics

	LEOFF		WSP
	<i>Plan 1</i>	<i>Plan 2</i>	
Number of Annuitants	7,623	100	647
Percent Change from 1998	2.5%	25.0%	5.7%
Total Annual Benefits (millions)	\$ 221	\$ 1	\$ 19
Percent Change from 1998	5.7%	0.0%	11.8%
<b>Averages:</b>			
Current Age	63.2	62.3	63.0
Years of Service	22.0	11.2	28.2
Monthly Benefit	\$ 2,420	\$ 791	\$ 2,405
Percent Change from 1998	3.3%	10.8%	3.3%



## Contributions and Benefits

### Overview

The retirement benefits provided by Washington's public employers are pre-funded by employer and employee contributions and investment earnings on those contributions. Money accumulates in the fund during

members' working careers and is paid out in benefits when they retire. This section describes the process by which contribution rates are determined. A later section details growth in assets attributed to investment gains.

Statutory Basis for 1999 Contribution Rates		
System	Employee	Employer/State
<b>PERS 1</b> <b>TRS 1</b>	Set in statute at 6% of salary.	Balance of cost of benefits, plus additional payment to amortize PERS 1 and TRS 1 unfunded liabilities.
<b>LEOFF 1</b>	Set in statute at 6% of salary. <sup>1</sup>	<b>Employer</b> rate set in statute at 6%. <sup>1</sup> <b>State</b> pays balance of cost of benefits.
<b>WSP</b>	Set in statute at 7% of salary.	Balance of cost of benefits.
<b>PERS 2</b> <b>SERS 2</b>	50% of the cost of PERS/SERS benefits as determined by valuation, less gain-sharing costs.	50% of the cost of benefits, plus additional payments to amortize PERS 1 and TRS 1 unfunded liabilities, and fund gain-sharing benefits.
<b>LEOFF 2</b>	50% of the cost of benefits as determined by valuation.	<b>Employer</b> rate set in statute at 30% of benefit costs. <b>State</b> rate set in statute at 20% of benefit costs.
<b>TRS 2</b>	No greater than the employer rate for Plans 2/3, less gain-sharing costs.	50% of the cost of benefits, plus additional payments to amortize PERS 1 and TRS 1 unfunded liabilities, and fund gain-sharing benefits.
<b>TRS 3</b> <b>SERS 3</b>	Employee does not contribute to the defined benefit plan, but contributes to the defined contribution benefit.	Same as Plan 2 rates.

<sup>1</sup> After 2000, employers and employees will make no contributions when the plan is fully funded.





## 1999 ACTUARIAL VALUATION REPORT

The principle of pre-funded retirement benefits is to steadily put money into a fund during employees' working careers. This money is invested and its earnings added to the fund. The goal is to have "grown" enough money in the fund through contributions and investments that at retirement, the benefits members have earned will be fully funded. Contribution rates calculated by the valuation reflect a "best estimate" of the amount of contributions needed to accomplish this goal. The table on page 15 demonstrates this flow of funds into and out of the systems during 1999.

Rates are expressed as percentages of pay. When these percentages are multiplied by active members' salaries and added to fund assets, the sum is expected to pay the projected cost of benefits. Because actual future costs are subject to some unknowns, such as inflation and investment return rates, arriving at a cost requires both statistical analysis and subjective decisions regarding economic and demographic assumptions.

### **The Basis of Contribution Rates**

The basis for the contribution rate-setting process is contained in Chapter 41.45 RCW. Contribution rates are calculated every year by the State Actuary's Office in a special study called an actuarial valuation. Aspects of the valuation are closely prescribed by state law, Washington Administrative Code and professional actuarial standards. In general, contributions are determined either by a specific rate set in statute or by actuarial valuation.

Retirement funding law identifies some factors to be included in the contribution rate calculation. One requirement is that the cost of any benefits enacted after the valuation rates are determined must be added to the rates

beginning the next fiscal year (September 1). This requirement often causes the rates actually charged to employers to differ from the rates adopted by the Pension Funding Council (PFC).

A second requirement of funding law is that employer rates include an amount to amortize Plan 1 unfunded liabilities. PERS/TRS 1 will be funded by December 31, 2016. System members do not contribute this additional amount.

The unfunded liability in the LEOFF 1 system was retired as of the 1997 actuarial valuation. Beginning July 1, 2000, LEOFF employees and employers are not required to make contributions unless the most recent valuation indicates the plan has unfunded liabilities.

The rate-setting process set in statute is based on the two-year biennial cycle. This approach is designed to allow state and local employers to budget a stable percent of salaries for retirement benefits during the ensuing biennium. Valuations are conducted every year, but only the results in odd-numbered years are used to determine contribution levels. Results of even-year valuations are used primarily to cost proposed legislation and track system experience.

Once odd-year rates are calculated, they are submitted to the PFC for official adoption. The Department of Retirement Systems is required to charge the adopted rates unless the Legislature enacts changes requiring a rate increase or decrease. In almost every biennium, benefit legislation is enacted that requires such adjustment. Adjusted rates become effective at the beginning of the fiscal year unless specified by the Legislature.



## CONTRIBUTIONS & BENEFITS

In addition to benefit changes, it is expected that actuarial changes will also occur. Shifts in membership demographics and economic gains and losses are recognized in every valuation, but only affect the rate-setting process every two years.

The Actuarial Reconciliation tables show the degree to which employer and state contribution rates have been affected by legislation and actuarial factors. Negative changes indicate that gains have occurred that will cause contribution rates to be reduced. Positive changes indicate that losses have occurred, or plan improvements were made causing rates to increase.

### Actuarial Reconciliation of 1999 Contribution Rates Employer and State Contribution Rates

	PERS/SERS	TRS	LEOFF 1	WSP
1998 Valuation	3.49%	5.81%	0.00%	0.00%
Changes Resulting from Legislation	0.95%	1.29%	0.89%	0.00%
Adjusted 1998 Valuation	4.44%	7.10%	0.00%	0.00%
Economic Gains and Losses	(1.20%)	(2.36%)	(3.02%)	(4.04%)
Demographic Gains and Losses	0.10%	0.11%	0.02%	(0.02%)
Other Gains and Losses	(0.13%)	0.53%	0.79%	0.00%
<b>1999 Valuation</b>	<b>3.21%</b>	<b>5.38%</b>	<b>0.00%</b>	<b>0.00%</b>

### Actuarial Reconciliation of 1999 Employer and State Contribution Rates To Plan 2 and Plan 3 Only

	PERS/SERS 2	TRS 2/3	LEOFF 2 <sup>1</sup>
1998 Valuation	1.49%	2.14%	2.14%
Changes Resulting from Legislation	0.94%	1.26%	0.57%
Adjusted 1998 Valuation	2.43%	3.40%	2.71%
Economic Gains and Losses	(0.42%)	(0.77%)	(0.28%)
Demographic Gains and Losses	0.05%	0.07%	0.01%
Other Gains and Losses	(0.36%)	(0.11%)	(0.13%)
<b>1999 Valuation</b>	<b>1.70 %</b>	<b>2.59 %</b>	<b>2.31 %</b>

<sup>1</sup> We have only shown the LEOFF 2 state contribution rate which is 20% of the cost.  
The LEOFF 2 employer contribution rate is 30% of the cost.



# 1999 ACTUARIAL VALUATION REPORT

The first two tables below show results of the actuarial valuations for the last three years. 1997 rates formed the baseline for contribution rates during the 1999 - 01 Biennium. Valuation rates calculated in 1998 (an even-numbered year) are usually used for tracking purposes only. In this biennium, the Legislature enacted rate changes based on 1998 results. Rates shown in the last column will provide the baseline rates for the 2001-03 Biennium.

One aspect of the valuation rates which often causes confusion is that they are calculated in the year after the one for which data is collected. Hence, the 1997 valuation is conducted in 1998, the 1999 valuation in 2000. In addition, rates are usually not scheduled to go into effect immediately. In the interval between the determination and effective date of rate changes, legislation is often enacted altering the rates actually charged to employers and employees. The rates shown on the facing page are the valuation rates, after they have been impacted by legislation.

Employer/State Valuation Contribution Rates					
	Plan		1997	1998	1999
<b>PERS/SERS</b>	All	Employer	4.36%	3.49%	3.21%
<b>TRS</b>	All	Employer	8.38%	5.81%	5.38%
<b>LEOFF</b>	1	Employer	6.00%	6.00%	0.00%
	1	State	0.00%	0.00%	0.00%
<b>LEOFF</b>	2	Employer	3.50%	3.22%	3.46%
	2	State	2.33%	2.14%	2.31%
<b>WSP</b>		Employer	0.00%	0.00%	0.00%

Employee Valuation Contribution Rates				
	Plan	1997	1998	1999
<b>PERS/SERS</b>	1	6.00%	6.00%	6.00%
	2	1.80%	1.49%	1.70%
<b>TRS</b>	1	6.00%	6.00%	6.00%
	2	2.94%	1.71%	2.15%
<b>LEOFF</b>	1	6.00%	6.00%	0.00%
	2	5.83%	5.36%	5.77%
<b>WSP</b>		7.00%	7.00%	7.00%

## CONTRIBUTIONS & BENEFITS

Employer/State Contribution Rates Charged					
	Plan		7/1/99	As of 5/1/00	9/1/00
<b>PERS/SERS</b>	All	Employer	4.41%	3.58%	4.44%
<b>TRS</b>	All	Employer	8.49% <sup>1</sup>	6.03%	7.10%
<b>LEOFF</b>	1	Employer	6.00%	6.00%	0.00% <sup>2</sup>
	1	State	0.00%	0.00%	0.00%
<b>LEOFF</b>	2	Employer	3.52%	3.25%	4.07%
	2	State	2.35%	2.16%	2.71%
<b>WSP</b>		Employer	0.00%	0.00%	0.00%

<sup>1</sup> TRS rates were implemented September 1, 1999.

<sup>2</sup> LEOFF employer rates were implemented July 1, 2000.

Employee Contribution Rates Charged				
	Plan	7/1/99	As of 5/1/00	9/1/00
<b>PERS/SERS</b>	1	6.00%	6.00%	6.00%
	2	1.85%	1.54%	2.43%
<b>TRS</b>	1	6.00%	6.00%	6.00%
	2	2.94% <sup>1</sup>	1.85%	3.01%
<b>LEOFF</b>	1	6.00%	6.00%	0.00% <sup>2</sup>
	2	5.87%	5.41%	6.78%
<b>WSP</b>		7.00%	7.00%	3.00% <sup>2</sup>

<sup>1</sup> TRS rates were implemented September 1, 1999.

<sup>2</sup> LEOFF and WSP employer rates were implemented July 1, 2000.

### Results of the 1999 Valuation

The rates shown in the table below are those determined by the 1999 actuarial valuation. They are identical to the numbers shown in the

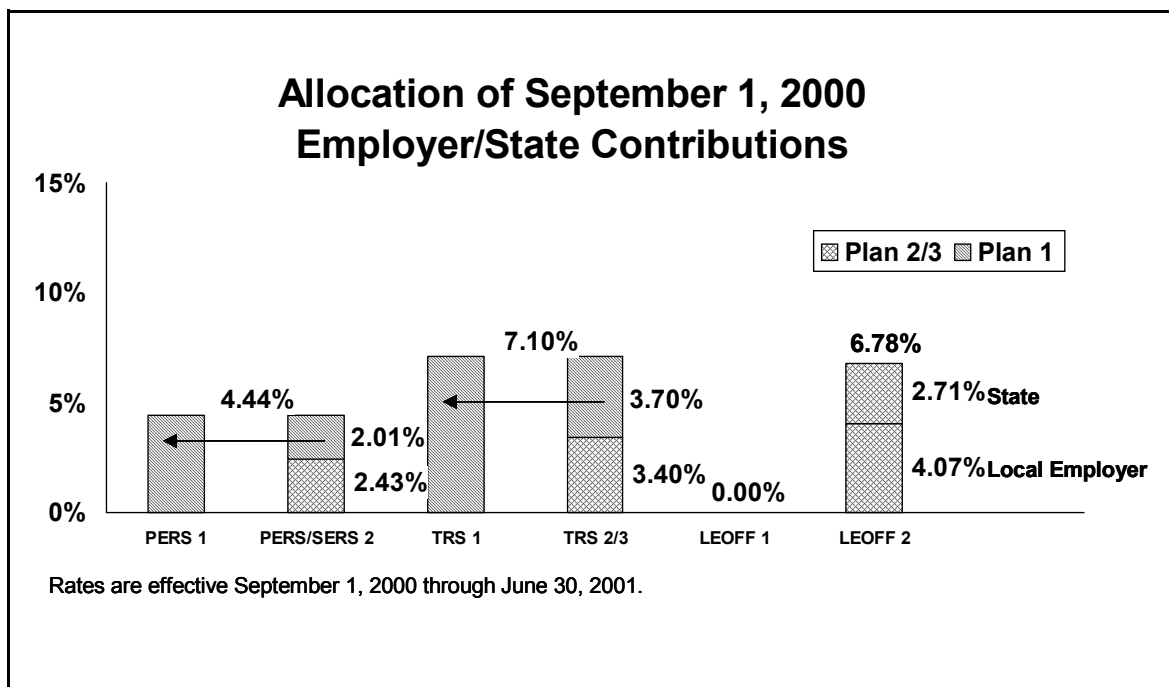
last column of the valuation rates tables above but have been reformatted for ease of reference. These rates are scheduled for implementation July 1, 2001.

1999 Valuation Rates							
	PERS/SERS		TRS		LEOFF		WSP
	Plan 1	Plan 2/3	Plan 1	Plan 2/3	Plan 1	Plan 2	
Employee	6.00%	1.70% <sup>1</sup>	6.00%	2.15% <sup>1</sup>	0.00%	5.77%	7.00%
Employer	3.21%	3.21%	5.38%	5.38%	0.00%	3.46%	0.00%
State	—	—	—	—	0.00%	2.31%	—

<sup>1</sup> Applies to Plan 2 only.



# 1999 ACTUARIAL VALUATION REPORT



## Allocation of Employer Contributions

Employees in the PERS, TRS and SERS systems contribute different amounts depending on whether they are members of Plan 1 or 2/3. The employers, however, contribute at the same rate regardless of which plan the employee is a member.

All of the money employees contribute goes into the plan fund in which they are members. The same is not true of all employer contributions. A portion of contributions from Plan 2/3 employers is distributed to the Plan 1 funds. This funding is targeted toward amortizing the PERS/TRS 1 unfunded liabilities by the year 2016. More detailed information on liabilities and funding issues is contained in the next chapter.

## Summary of Financial Activity

The table below provides an overview of the retirement systems' cash-flow during the 1999 valuation year. The left side of the table shows the contributions made to the systems by members and employers. The center column reflects the dollar amount of investment return on contributions and assets. On the right-hand side, money leaving the retirement systems is depicted under the heading of "Benefits."

During 1999, the Plan 1 systems paid out substantially more in benefits than the Plan 2/3 systems. This is characteristic of older plans, where a large number of members have had the opportunity to complete careers of 25 to 30 years before becoming eligible for retirement.

## CONTRIBUTIONS & BENEFITS



### 1999 Cash Flow in the Retirement Systems

<i>Dollars in Millions</i>								
	Beginning Fund Balance (at Market)	Contributions (+)		Investment Income and Misc. (+)	Benefits (-)		Refund of Employee Contributions & Expenses	Ending Fund Balance (at Market)
		Employees	Employers & State		To Annuitant			
<b>PERS 1</b>	\$ 9,646	\$ 74	\$ 221	\$ 1,736	\$ 589		\$ 5	\$ 11,082
<b>PERS 2</b>	9,920	173	173	1,861	37		54	12,036
<b>TRS 1<sup>1</sup></b>	8,292	59	223	962	433		102	9,002
<b>TRS 2/3</b>	2,722	22	100	322	4		157 <sup>2</sup>	3,006
<b>LEOFF 1</b>	4,780	7	32	860	217		2	5,460
<b>LEOFF 2</b>	1,848	50	50	351	1		10	2,288
<b>WSP</b>	602	4	3	110	18		(1)	702

<sup>1</sup> Refunds of employee contributions include withdrawn annuities at retirement.

<sup>2</sup> Includes transfers to TRS 3 Defined Contribution Plan.

The Plan 2/3 systems have smaller balances and pay out far less money in benefits. Having been created less than 23 years ago, they are considered relatively young by pension system standards. At this point, fewer Plan 2/3 members are eligible to retire than Plan 1 members. Those members that do retire have earned less service credit and have smaller salaries. As a result, their benefits tend to be lower than Plan 1 benefits. (The Membership Section provides more details about average benefit amounts.)

### Plan 1 Cost-of-living Benefits

Annual increases to benefits (known as cost-of-living adjustments or COLAs) are a relatively new component of PERS 1 and TRS 1. Unlike other systems administered by the state, original provisions of PERS 1 and TRS 1 did not include a mechanism for regularly increasing benefits after members retired. COLAs in PERS/TRS 1 were granted ad-hoc, meaning the Legislature approved one-time increases as it deemed appropriate without making a commitment to future increases.

This situation changed in 1989 with the enactment of the Plan 1 Age-65 COLA. Six years later, the Uniform COLA superceded the Age-65 COLA with a new benefit design and eligibility requirements. The majority of retirees are, or will become, eligible for the Uniform COLA. A very small number of retirees receive post-retirement increases through other COLA designs.

Plan 1 retirees age 65 or younger who had earned a benefit less than \$26.97 per month per year of service in 1999, were eligible to receive a benefit increase under minimum benefit provisions. The minimum benefit provides members who qualify for low monthly benefits with a guaranteed level of retirement income. Increases in the minimum benefit match those for the Uniform COLA. After a minimum benefit recipient reaches age-66, they are counted as Uniform COLA recipients.

The Uniform COLA and Minimum Benefit were both modified in 1998 with a feature known as "gain-sharing." This feature provides a permanent increase to the annual increase amount when certain conditions regarding investment return are met.



## 1999 ACTUARIAL VALUATION REPORT

### PERS/TRS 1 Cost-of-Living Adjustments

COLA Type	Retirees Receiving	Increase	Eligibility
<b>Uniform</b>	56,875	A flat amount which increases 3% a year. Annual increase is multiplied by member's years of service.	Age 66 or older and retired one year.
<b>Minimum Benefit</b>	846	Equal to Uniform COLA.	Age 65 or younger; and earned benefit is less than \$26.97 per month/year service, (as of 7/1/99.)
<b>Gain-Sharing</b>	57,721	Biennial increase in the Uniform COLA contingent on extraordinary investment returns.	Receiving the Uniform COLA or Minimum Benefit.
<b>Benefit Payment Option</b>	202	At retirement, member may elect an actuarially reduced initial benefit which increases up to 3% annually based on increases in the CPI.	Members retired after 1990.
<b>Age 65</b>	26	Annual increase of up to 3%, based on increase in the CPI.	Retirees whose age-65 retirement benefit purchasing power is reduced to less than 60%, as determined by increases in the Consumer Price Index.

#### Uniform COLA Recipients

The Uniform COLA is a flat amount per month per year of service. This amount is referred to as the "annual increase amount." The amount of the Uniform COLA grows by 3% each year. In 1999 it paid \$1.05 per month per year of service. In 2000 it paid \$1.08.

Statistics regarding the amount of increases and who receives them are collected and analyzed by the Actuary's Office each year. The following table shows characteristics of current Uniform and Minimum COLA recipients.

The increase is payable to:

- Retirees age 66 or older who have been retired at least one year; and
- Retirees less than age 66 who are eligible for the minimum benefit.

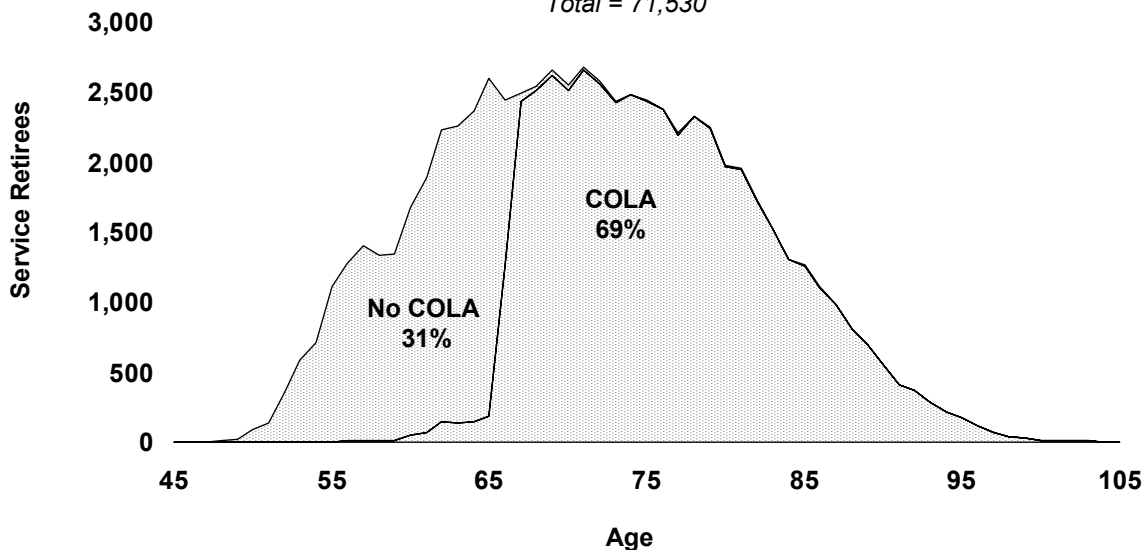
## CONTRIBUTIONS & BENEFITS

### PERS/TRS 1 Uniform and Minimum COLA Recipients (as of 7/1/00)

	PERS 1	TRS 1
Recipients	40,333	19,675
Increase in Uniform COLA Benefits	\$9,811,000	\$6,246,000
<b>Averages:</b>		
Current Age	77	77
Age at Retirement	62	60
Year of Retirement	1985	1983
Monthly Benefit per YOS	\$ 42	\$ 44
Monthly Benefit	\$ 791	\$ 1,086
Years of Service	19	25
Years Retired	15	17

### PERS/TRS Plan 1 COLA Status by Age

Total = 71,530





# 1999 ACTUARIAL VALUATION REPORT

## Gain-Sharing Distributions

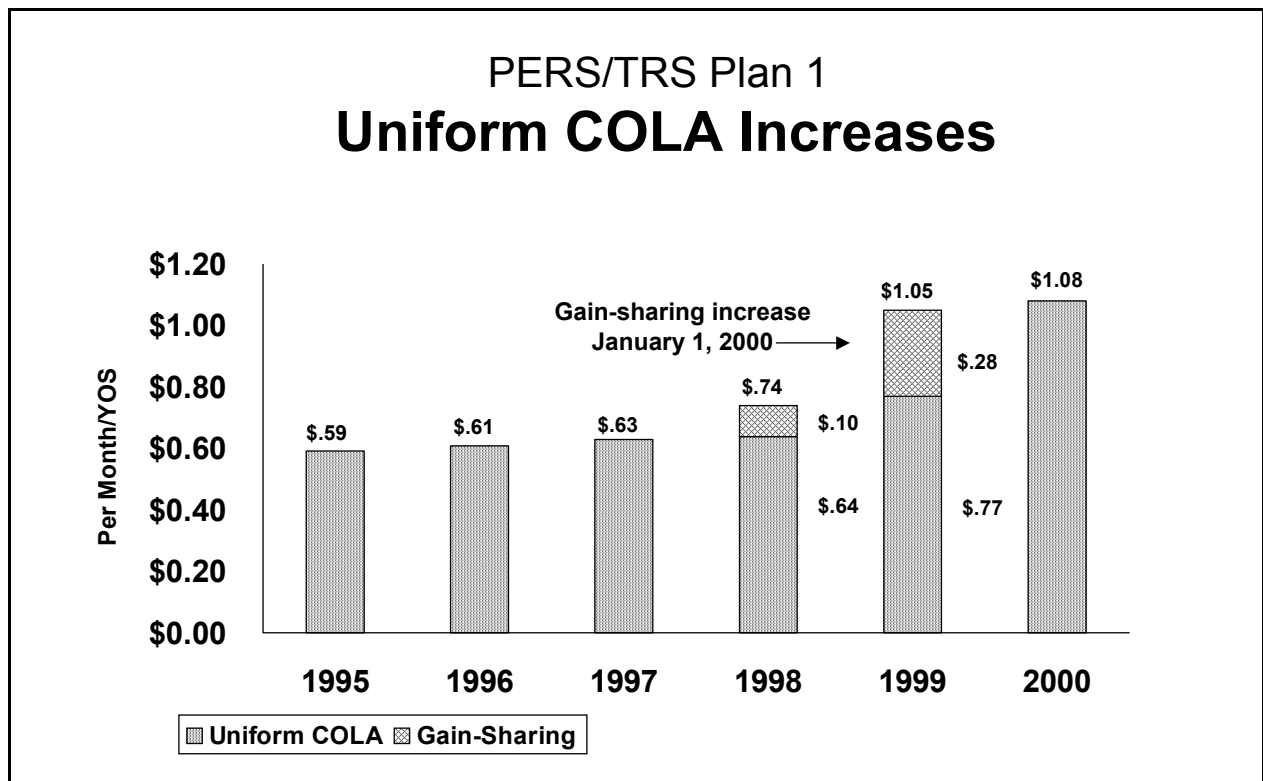
Gain-sharing is a mechanism that increases benefits in PERS 1, TRS 1 and all the Plans 3. These increases are not automatic, but contingent on extraordinary investment return. In reference to gain-sharing, extraordinary returns occur when the funds average investment gains more than 10% for the previous four-year period.

When the previous four-year average exceeds 10%, a calculation is performed to determine the amount of extraordinary gains that will be distributed to eligible members. Gain-sharing calculations and distributions are made once each biennium.

## Gain-sharing for PERS/TRS 1

As implemented for PERS/TRS 1, gain-sharing divides extraordinary investment gains between three sectors of retirement funding. When four-year average gains are over 10%, half of the amount over 10% is used to permanently increase the Uniform COLA. The other half is used to amortize unfunded liabilities ahead of schedule. All other gains act to reduce future employer contribution rates, and offset losses in other years.

PERS/TRS 1 members benefit from gain-sharing even if they are not yet retired because each distribution permanently boosts the Uniform COLA amount. If no additional extraordinary gains were realized by the retirement funds, future COLAs will still be higher because of past gains. The following graph demonstrates the effect past gain-sharing has had on the Uniform COLA.







## Gain-sharing for TRS 3 Members

In TRS 3, and the Plan 3 systems soon to become operational, the same 10% rate of return is used to determine when extraordinary returns have occurred. A second calculation is then made to determine the amount of gains to be distributed.

First, Plan 3 members' service is divided by all system members' service. This produces the percentage of retirement funds which can be attributed to Plan 3 member service. The Plan 3 percentage is then multiplied by the dollar amount of gains over 10%.

In the Plans 3, active, retired and term-vested members are eligible for gain-sharing distributions. Distributions are a lump sum that is deposited directly into members' defined contribution accounts. Only those members who are eligible at the time of the calculation receive gain-sharing payments.

In the following table note that the total amount of earnings earmarked for distribution is much larger in the Plans 1, than TRS 3. This is because the Plan 1 funds are much larger. When a gain-sharing percentage is applied to the asset value, the result is a larger product.

All members of PERS/TRS 1 will see an increase in the Uniform COLA amount because of gain-sharing. The number of members shown below is equal to those who were retired at the time of the distribution.

The total amount of Plan 3 distributions is expected to grow rapidly as PERS/SERS 2 members transfer to Plan 3 and their years of service continue to accumulate. With more members eligible for gain-sharing, future increases in distributions will not necessarily translate into larger payments per member.

<b>Summary of Gain-Sharing Statistics</b>		
<i>Dollars in Millions</i>	<b>PERS/TRS 1</b>	<b>TRS 3</b>
<b>2000 Distribution</b>		
1995-1999 Average Return Over 10%	6.56%	6.56%
1995-1999 Gain-sharing Total	\$1,268	\$73
Purchase Benefit Increase	\$634	\$73
Shorten UAAL Amortization Period	\$634	—
Members Receiving Distribution	60,052	35,529
<b>1998 Distribution</b>		
1993-1997 Average Return Over 10%	3.70%	3.70%
1993-1997 Gain-sharing Total	\$580	\$28
Purchase Benefit Increase	\$290	\$28
Shorten UAAL Amortization Period	\$290	—
Members Receiving Distribution	59,470	27,243



## 1999 ACTUARIAL VALUATION REPORT





# Funding Status

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## Overview

The goal of pension funding is to accumulate enough money during a member's working career to pay retirement benefits after the member retires. Measurements of funding status indicate how well a retirement plan is accomplishing that goal. There are two standard indicators of funding status: the funding ratio and the existence of an unfunded liability.

Neither the funding ratio nor the unfunded liability are used in the calculation of contribution rates, but are valuable in other ways. They are used for comparison with other systems and for monitoring the progress of funding over time. Both measure the benefit obligations, or liabilities, of a plan against its assets. This section details the types and cost of benefits members are expected to earn. The next section addresses system assets.

## The Calculation of Liabilities

Liabilities accrue almost entirely from retirement, death or disability benefits. Members who terminate employment before becoming eligible for retirement add little to total system liabilities.

The challenge of projecting liabilities lies in accurately predicting the number of members who will qualify for benefits and the total cost of benefits they will become eligible to receive.

The calculation of liabilities is complex. It is based on benefits contained in statute and uses actuarial methods; demographic assumptions

developed from past experience; economic assumptions adopted by the PFC; and data provided by the DRS. These components are entered into a mathematical model which projects the cost of future benefits.

Liabilities can be represented several different ways, depending on how member salaries and service credit are interpreted. In the Washington retirement systems, the Present Value of Credited Projected Benefits (CPB) is used in determining the funding ratio. This expresses the cost of future retirement benefits in today's dollars. It uses the salaries members are projected to earn in the future, but only the amount of service members have earned to date. An unfunded liability measures the fund's assets against the benefits earned through the valuation year.

## Funding Ratios

A funding ratio represents the percent of benefits members have earned that can be paid by current assets. It is determined by dividing the valuation assets by the CPB. If adequate contributions are made from a plan's inception and experience matches assumptions, funding status is maintained at or above 100%. However, assumptions are developed to predict experience over a long period of time. Experience in any one year is almost certain to be different. Thus funding status can be expected to vary moderately from year to year. Funding ratios are most useful in tracking funding status over a series of years.



# 1999 ACTUARIAL VALUATION REPORT

## 1999 Funding Status Summary

<i>(Dollars in Millions)</i>	<b>Credited Projected Benefits</b>	<b>Valuation Assets</b>	<b>Unfunded Liability (Surplus)</b>	<b>Funding Ratio</b>
PERS 1	\$ 11,265	\$ 10,456	\$ 809	93%
PERS 2	6,019	11,371	(5,352)	189%
TRS 1	9,359	8,696	663	93%
TRS 2/3	1,547	2,908	(1,361)	188%
LEOFF 1	4,136	5,150	(1,014)	125%
LEOFF 2	1,408	2,163	(755)	154%
WSP	417	662	(246)	159%
<b>Total</b>	<b>\$ 34,151</b>	<b>\$ 41,405</b>	<b>\$ (7,254)</b>	<b>121%</b>

Young benefit plans, like the 2/3 tiers, often have funding ratios greater than 100%. Contributions are being collected at a percent of pay, which over the course of the members' working career is projected to pay for benefits. At this point in time however, members are not near enough to retirement to have created a large liability. As these plans mature and their members draw closer to retirement, the funding ratio will decline to 100%.

### Unfunded Liabilities

All systems created since 1977 are required by law to collect contributions at a rate that fully funds benefits. This requirement applies to all Plans 2 and 3. Full funding is achieved by biennial adjustment of contribution rates to levels sufficient to fund the benefits currently provided in statute and requiring any new benefits enacted be accompanied by sufficient increases in contributions.

An unfunded liability occurs when a plan's assets total less than its benefit liabilities. The unfunded liability number represents the dollar value of earned benefits not funded by current assets.

Only PERS 1 and TRS 1 currently have unfunded liabilities. These were created during the 1970s and 80s through underfunding and the provision of retroactive benefit increases. Three of the biggest increases affecting funding were: an increase in the retirement benefit formula from 1% to 2%; lowering normal retirement eligibility to age 55 with 25 years of service; and adding cost-of-living adjustments (COLAs) for retirees.

As of December 1, 1997 the unfunded liability in LEOFF 1 has been retired. Good economic experience and a change in economic assumptions accelerated amortization in this Plan, and created a fund surplus.

## 1999 Credited Projected Benefits

<i>(Dollars in Millions)</i>								
	Plan 1			Plan 2/3				
	PERS	TRS	LEOFF	PERS/SERS	TRS	LEOFF	WSP	Total
<b>Active Members:</b>								
Future Retirees	\$ 4,271	\$ 3,984	\$ 493	\$ 4,065	\$ 1,108	\$ 1,174	\$ 180	\$ 15,276
Vested, Terminated	23	44	2	215	67	28	3	382
Death Benefits	34	29	13	61	18	7	3	165
Disability Benefits	39	21	310	98	9	8	0	485
Uniform COLA	379	317	—	—	—	—	—	697
Refund on Termination	19	7	0	203	9	14	0	252
Refund on Death	34	27	4	95	8	24	1	193
<b>Total Active</b>	<b>\$ 4,800</b>	<b>\$ 4,430</b>	<b>\$ 823</b>	<b>\$ 4,737</b>	<b>\$ 1,219</b>	<b>\$ 1,256</b>	<b>\$ 187</b>	<b>\$ 17,451</b>
<b>Inactive Members:</b>								
Vested, Terminated	\$ 176	\$ 191	\$ 17	\$ 522	\$ 109	\$ 27	\$ 2	\$ 1,044
Current Retirees	4,982	3,784	1,039	403	43	12	215	10,477
Disability Retirees	104	90	1,938	29	3	1	1	2,164
Survivors	312	155	320	15	1	0	11	815
Uniform COLA	854	678	—	—	—	—	—	1,532
<b>Total Inactive</b>	<b>\$ 6,428</b>	<b>\$ 4,897</b>	<b>\$ 3,314</b>	<b>\$ 969</b>	<b>\$ 156</b>	<b>\$ 39</b>	<b>\$ 230</b>	<b>\$ 16,033</b>
Sub-Total	11,227	9,327	4,136	5,706	1,375	1,295	417	33,483
Gain-sharing	38	32	—	—	78	—	—	147
Valuation Total	11,265	9,359	4,136	5,706	1,453	1,295	417	33,630
Laws of 2000	—	—	—	313	94	113	—	521
<b>Grand Total</b>	<b>\$ 11,265</b>	<b>\$ 9,359</b>	<b>\$ 4,136</b>	<b>\$ 6,019</b>	<b>\$ 1,547</b>	<b>\$ 1,408</b>	<b>\$ 417</b>	<b>\$ 34,151</b>

Totals may not agree due to rounding.



## 1999 ACTUARIAL VALUATION REPORT



# Retirement System Assets

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## Overview

Each retirement system maintains its own separate asset fund, from which benefits are paid. For investment purposes, however, these funds are commingled. Individual funds own a proportionate share of all the investments, much as individuals own shares in mutual funds.

Assets are managed and invested by the State Investment Board (SIB.) The 14-member board is comprised of four retirement system members; one legislator each from the House and Senate; the State Treasurer; and the directors of the Department of Labor and Industries and DRS. Five non-voting members, each with experience in the field of investments, are appointed by the board.

The SIB directs the work of an executive director and chief investment officer in the investment of retirement funds. All information about assets and investment activities come from the SIB.

Fund investments are governed by guidelines contained in statute. A cornerstone of these guidelines is the "prudent man" standard. Investments shall be made with the same level of care a prudent person, familiar with investment matters, would use.

## Valuing Fund Assets

The value of retirement system assets are always in flux. Just as the stock market registers gains and losses on a daily basis, the value of retirement assets also rises and falls. Assets which are **market valued** reflect their worth on a single date. The market value of a fund may rise or fall dramatically from year to year, thus it is considered a volatile measure. Volatility causes contribution rates to also rise and fall. This is not desirable when the goal is to develop stable rates over several years.

To value assets in a less volatile manner, a "smoothing" technique is used in the contribution rate-setting process. This technique recognizes 50% of the gain or loss over 7.5% in the valuation year. The other 50% of investment performance is recognized over the subsequent two years. (Thirty percent is recognized in the second year and 20% in the third.)

By smoothing returns, annual results are spread over a three-year period and overlapped with other years' results. **Valuation assets** is the specific term used to describe assets which have been calculated in this manner.

**Investment gains and losses** are the amount of earnings over or under the investment assumption adopted by the PFC. Currently that rate is 7.5% for all systems. If a fund realizes a return of 9.5%, the gain would be 2%. If investment returns are 5%, the fund posts a loss of 2.5%.



## 1999 ACTUARIAL VALUATION REPORT

### Allocation of Assets

The holdings of the Washington retirement systems can be divided into eight classes. In descending order of magnitude they are:

**U.S. Equity:** Stock in U.S. companies.

**Non-U.S. Equity:** Stock in foreign companies.

**U.S. Fixed Income:** U.S. Treasury and government bonds; investment-grade corporate bonds; publicly traded mortgage-backed securities; mortgages; asset-backed and convertible securities.

**Venture Capital:** Equity financing of early expansion and later-stage growth of small businesses.

**Leveraged Buy-outs (LBOs):** The purchase of all assets or stock in a company using borrowed funds.

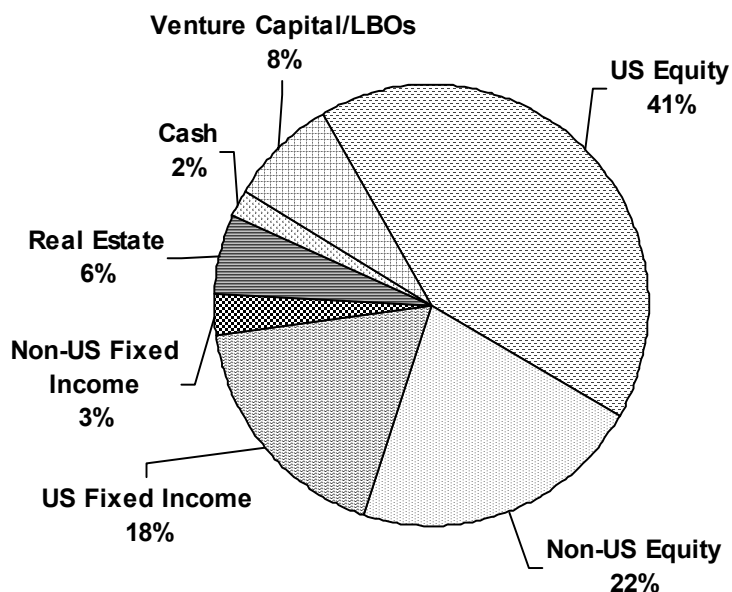
**Real Estate:** Office and retail space; apartments; warehouses; hotels; etc

**Non-U.S. Fixed Income:** Foreign government bonds.

**Cash:** Money held while being transferred between investments or placed temporarily in an interest-bearing account.

### 1999 Allocation of Commingled Trust Fund Assets

*Total = \$44,026,000,000*





## 1999 Washington Retirement System Assets

<i>(Dollars in Millions)</i>	<b>PERS</b>	<b>TRS<sup>1</sup></b>	<b>LEOFF</b>	<b>WSP</b>	<b>Total</b>
U.S. Equity	9,483	5,490	3,177	288	\$ 18,438
Non-U.S. Equity	4,453	1,949	1,492	135	8,030
U.S. Fixed Income	4,849	2,867	1,625	147	9,487
Non-U.S. Fixed Income	700	344	234	21	1,299
Cash	280	328	98	8	714
Real Estate	1,346	595	451	41	2,433
Venture Capital	1,026	501	344	31	1,901
Leveraged Buy-outs	863	545	289	26	1,723
Accruals, etc.	127	1,310 <sup>2</sup>	38	3	1,478
<b>Total</b>	<b>\$ 23,126</b>	<b>\$ 13,928</b>	<b>\$ 7,748</b>	<b>\$ 702</b>	<b>\$ 45,504</b>
TRIS 3 Member Accounts	—	1,364	—	—	1,364
Payables	7	557 <sup>3</sup>	0	0	564
<b>Market Value Assets</b>	<b>\$ 23,119</b>	<b>\$ 12,008</b>	<b>\$ 7,748</b>	<b>\$ 702</b>	<b>\$ 43,576</b>
<b>Valuation Assets</b>	<b>\$ 21,827</b>	<b>\$ 11,604</b>	<b>\$ 7,313</b>	<b>\$ 662</b>	<b>\$ 41,405</b>
<b>Valuation Assets as Percent of Market Value Assets</b>	<b>94.4%</b>	<b>96.6%</b>	<b>94.4%</b>	<b>94.4%</b>	<b>95.0%</b>

*Totals may not agree due to rounding.*

<sup>1</sup> TRS assets as of June 30, 1999. All other systems as of December 31, 1999.

<sup>2</sup> Accruals for TRS include the collateral held under the Security Lending Agreement.

<sup>3</sup> The payable for TRS includes the offsetting collateral held under Security Lending agreements.



# 1999 ACTUARIAL VALUATION REPORT

## Growth of Assets 1995-99

Growth in the retirement funds comes from two sources: contributions and earnings on investments. In almost all years, investment earnings account for the largest component of asset growth.

The level of Plan 1 contributions remains relatively steady from year to year even though the number of members contributing is decreasing. This is occurring for two reasons. First salary growth is offsetting the loss of contributions from retiring members. Second, the Plan 1 unfunded liability is funded over Plan 1, 2, and 3 member salaries. These salaries are growing by pay increases and membership growth.

Benefit payments and refunds are expected to grow in all plans, but not indefinitely. As benefit payments increase in the closed plans (Plans 1 and TRS 2), fund growth will decrease. Eventually outlays for benefits will outstrip income and the funds will begin to shrink. If actuarial calculations are accurate, the last plan dollar will be paid out when the last retiree dies. Open plan funds are expected to continue growing for the foreseeable future.

## Economic Components of the Valuation

In determining contribution rates for the state retirement systems, the valuation process does not use the actual economic indicators for that time period. The calculation of contribution rates is based on assumptions regarding economic activity.

### Detail of Asset Growth: Plan 1 and WSP

(Dollars in Millions)

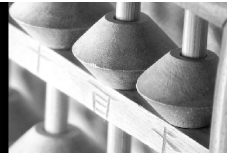
	1995	1996	1997	1998	1999
Beginning Balance	\$ 13,553	\$ 16,055	\$ 18,184	\$ 20,868	\$ 23,321
Contributions	666	663	653	654	621
Earnings on Investment	2,867	2,572	3,203	3,076	3,668
Benefit Payments & Refunds	(1,031)	(1,098)	(1,172)	(1,277)	(1,366)
<b>Ending Balance</b>	<b>\$ 16,055</b>	<b>\$ 18,184</b>	<b>\$ 20,868</b>	<b>\$ 23,321</b>	<b>\$ 26,246</b>

### Detail of Asset Growth: Plan 2/3

(Dollars in Millions)

	1995	1996	1997	1998	1999
Beginning Balance	\$ 6,288	\$ 8,327	\$ 10,297	\$ 12,810	\$ 14,490
Contributions	644	698	741	719	569
Earnings on Investment	1,459	1,347	1,884	1,856	2,534
Benefit Payments & Refunds	(64)	(75)	(114) <sup>1</sup>	(895) <sup>1</sup>	(263) <sup>1</sup>
<b>Ending Balance</b>	<b>\$ 8,327</b>	<b>\$ 10,297</b>	<b>\$ 12,808</b>	<b>\$ 14,490</b>	<b>\$ 17,330</b>

<sup>1</sup> Includes transfers to TRS 3 Defined Contribution accounts.



Assumptions used for the 1997 and 1998 valuations were adopted by the Economic Revenue and Forecast Council in 1996. Assumptions for the 1999 valuation were adopted by the Pension Funding Council (PFC) in 1998. They are shown in the table below.

The PFC is a relatively new body, created specifically to adopt the economic assumptions and contribution rates used in retirement system valuations. It is comprised of six representatives: the directors of the Department of Retirement Systems and Office of Financial Management; and the chair and ranking minority member of the House and Senate fiscal committees.

The PFC is responsible for:

- Adopting changes to economic assumptions and contribution rates; and
- Administering a biennial actuarial audit of the contribution rate-setting valuation.

The economic returns shown on the following page are the actual gains and losses recorded for the past five years. These numbers are used to determine the value of assets and monitor the difference between assumptions and experience. Except for TRS, results shown are for calendar year periods. TRS data is based on the fiscal year ending June 30.

Salary increases do not include data from members in their early years of employment. These members are excluded because their earnings are boosted annually by "step" and "longevity" increases. Salary growth shown is generated by general cost-of-living increases, job changes, etc.

The Consumer Price Index shown is the Seattle/Tacoma/Bremerton area series for urban wage earners and clerical workers. This series determines COLA increases for almost all system benefits. PERS 1 disability and Judge's Retirement System increases are based on two slightly different series.

	Economic Assumptions			
	<u>PERS/SERS</u>	<u>TRS</u>	<u>LEOFF</u>	<u>WSP</u>
Future Salaries		4.00%		
Earnings on Member Contributions		5.50%		
Return on Investments		7.50%		
Inflation		3.50%		
Growth in Membership	1.25%	0.90%	1.25%	1.25%



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	1995	1996	1997	1998	1999
<b>Rate of Return on Market Value Assets<sup>1</sup></b>					
All Systems	25.7%	15.1%	17.4%	14.1%	18.4%
<b>Rate of Return on Valuation Assets<sup>2</sup></b>					
PERS	14.0%	15.1%	17.4%	15.2%	16.8%
TRS	12.1%	14.3%	18.4%	18.1%	14.7%
LEOFF	14.0%	15.4%	17.1%	15.3%	16.9%
WSP	14.1%	15.2%	17.5%	15.4%	16.9%
<b>Salary Increases<sup>2</sup></b>					
PERS	3.1%	4.1%	3.0%	3.5%	3.7%
TRS	1.8%	4.5%	1.1%	3.9%	1.1%
LEOFF	4.7%	4.2%	4.3%	5.0%	3.9%
WSP	4.2%	7.5%	8.6%	6.5%	7.2%
<b>Seattle/Tacoma/Bremerton CPI - W<sup>1</sup></b>					
All Systems	2.9%	3.3%	3.1%	2.6%	3.1%

<sup>1</sup> Calendar year.

<sup>2</sup> As of June 30 for TRS, December 31 for all other systems.

## Plan 3 Defined Contribution Accounts

With the creation of TRS 3 in 1996, the state began to administer a new form of retirement savings -- TRS 3 members' defined contribution (DC) accounts. In 1999, there were 35,334 DC accounts. The number of DC accounts will jump in 2000, when SERS 2 members are expected to begin moving to SERS 3. Another sharp rise in accounts will occur in 2002, when PERS 2 members become eligible to move to PERS 3.

Contributions to DC accounts are made in pre-tax dollars, at a rate that is determined by individual members. There are six contribution options from which to choose. Once selected, members may not change their contribution rate unless they change employer. The following table indicates the percent of TRS 3 members investing at each of the rates available in 1999.

<b>TRS 3 Contribution Rate Options</b>		
<b>Option</b>	<b>Contribution Rate</b>	<b>Active Members<sup>1</sup></b>
<b>A.</b>	5%	25%
<b>B.</b>	5% until age 35 6% from age 35-45 7.5% age 45 and above	13%
<b>C.</b>	6% until age 35 7.5% from age 35-45 8.5% age 45 and above	20%
<b>D.</b>	7%	22%
<b>E.</b>	10%	13%
<b>F.</b>	15%	6%

<sup>1</sup> As of 1999.

Members choose how their contributions will be invested, selecting from two basic programs: the Total Allocation Portfolio (TAP), or Self-directed Investments. Total Allocation Portfolio refers to total allocation in the Commingled Trust Fund (CTF) for all plans. Members participating in this program earn the same return on their investment shares as the state's defined benefit plans.

The Self-directed Investments program provides a menu of investment funds into which members may direct contributions. Members may not contribute to the TAP and Self-directed programs at the same time, but can retain balances in each.

## TRS 3 Defined Contribution Account Distributions

<b>Fund</b>	<b>1999 Market Value</b>	<b>1999 Rate of Return</b>
<b>TAP</b>	\$ 641,485,489	11.8%
<b>US Stock Fund</b>	\$ 189,135,778	20.4%
<b>US Large Stock Fund</b>	\$ 187,380,344	22.9%
<b>US Small Stock Fund</b>	\$ 73,324,853	1.0%
<b>International Stock Fund</b>	\$ 76,887,055	8.6%
<b>Bond Market</b>	\$ 74,497,917	2.7%
<b>Money Market</b>	\$ 80,466,504	4.3%
<b>Total</b>	\$ 1,323,177,940	—



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